

REMARKS

In the Office Action, claims 1-27, 37-40, and 42-50 were rejected. By the present Response, Applicants have amended claims 21, 37, 39, and 46 and canceled claims 22 and 24 without prejudice. Upon entry of the amendments, claims 1-21, 23, 25-27, 37-40, and 42-50 will be pending in the present patent application. In view of the foregoing amendments and the following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

First Rejection Under 35 U.S.C. § 102(b)

In the Office Action, claims 39, 40, and 46-50 were rejected under 35 U.S.C. § 102(b) as anticipated by the Rohrbaugh et al. reference (U.S. Patent No. 5,770,838; hereinafter “Rohrbaugh”). In rejecting these claims, the Examiner conceded that Rohrbaugh does not disclose a controlled induction heating device. *See* Office Action mailed March 25, 2005, p. 2. Keeping this in mind, Applicants note that independent claims 39 and 46 have been amended, and these claims currently recite “an induction heating device.” Accordingly, Applicants respectfully submit that Rohrbaugh does not anticipate amended claims 39 and 46 and their respective dependent claims. Therefore, Applicants respectfully request reconsideration and allowance of claims 39, 40, and 46-50.

Second Rejection Under 35 U.S.C. § 102(b)

In the Office Action, claims 46-50 were rejected under 35 U.S.C. § 102(b) as anticipated by the Harris reference (U.S. Patent No. 5,746,114; hereinafter “Harris”). Applicants, however, respectfully submit that Harris does not anticipate amended independent claim 46, because Harris does not disclose an induction heating device as is recited in this claim. Accordingly, Applicants respectfully request reconsideration and allowance of independent claim 46 and its respective dependent claims 47-50.

First Rejection Under 35 U.S.C. § 103(a)

In the Office Action, claims 1-9, 11-19, 21-27, 37, 39, 42, and 44-50 were rejected under U.S.C. § 103(a) as obvious in view of the Tooch reference (U.S. Patent No. 4,606,529; hereinafter “Tooch”), the Ruget reference (U.S. Patent No. 3,603,103; hereinafter “Ruget”), and the Yuki reference (U.S. Patent No. 5,385,200; hereinafter “Yuki”). In rejecting the foregoing claims, the Examiner specifically stated as follows:

Tooch shows a furnace 10 for heating metal workpieces, such as billets or slabs including a programmable processor controller 400 operable to control operation of the heating rate of the heating elements 110, wherein the controller is operable to receive programming instructions to selectively increase and decrease workpiece temperature and a temperature feedback device operable to provide the controller with an electrical signal representative of the workpiece temperature by temperature sensors 120, 220, 320. At col. 2, lines 3-66, it teaches that adjustments of the heating rate of the gas burner is made by modifying the programs according to the deviation of the measured temperatures from the from the program (see also Figures 1-3 and col. 3, line 26 — col. 6, line 35). It uses a furnace with burners instead of an electrical heating device such as an induction heater. Ruget shows that it is well known to use either an induction heating elements or gas burners for heating metal workpieces such as billets (see Figure 3 and col. 4, lines 6-21). Yuki also shows the use of an induction heating device 34 with a programmable controller 36 to control the heating temperature of a metal workpiece with a temperature sensor 40. It teaches that the induction heater 34 may be replaced by other heating device utilizing an electric energy or a burner or other heating device utilizing a thermal energy or a fuel, provided such heating device is capable of regulating the amount of heat generated (see Figure 1 and col. 16, lines 31-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tooch to use any well known heating device including an electrical induction heating device instead of a gas burner for the well known advantages of induction heating devices, such as, cleaner operation and more efficient heating of only the metal workpieces, in view of the teaching of Ruget and Yuki. The exact heating profile would have been a matter of engineering expediency depending on the workpiece characteristics, including the material and the heat treatment process and the power source capabilities and can be easily determined by an ordinary artisan through routine experimentation. In regard to claims 3 and 4, the exact temperature obviously depends on the type of heat treatment process, as the use of induction heating for stress relief of metal workpieces is well known in the art. Most importantly, the programmable controllers of these references are also “operable” to do all the intended control steps/functions as claimed. In regard to claims 13, 15, 17-19, 44

and 45, the use of disc drives, visual display and interface modules is well known in the art of computerized controlling devices.

Office Action mailed March 25, 2005, pp. 4-6.

Applicants, however, respectfully assert that the pending claims are not obvious in view of the cited references, because the cited references do not disclose all of the features recited in the instant claims and, furthermore, because cited references lack the requisite motivation for combination to reach the instant claims. Applicants respectfully submit that the burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). To establish a *prima facie* case, the Examiner must not only show that the combination or modification includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *See Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). Moreover, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination or modification. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Indeed, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *See In re Mills*, 16 U.S.P.Q.2d. 1430 (Fed. Cir. 1990).

Additionally, the Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *See In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). Moreover, when prior art references require a selected combination or modification to render obvious a subsequent invention, there must be some reason for the combination or modification other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination or modification. *See Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

Indeed, the Federal Circuit has warned that the Examiner must not “fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” See *In re Dembiczak* 50 U.S.P.Q. 2d 52 (Fed. Cir.1999). (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir.1983)). Moreover, avoiding hindsight reconstruction is especially important regarding less technologically complex inventions, where the very ease which the invention can be understood may prompt one employ such hindsight. See *id.*

Furthermore, the Federal Circuit has consistently held that a reference that teaches away from the claimed invention cannot serve to create a *prima facie* case of obviousness. See *In re Gurley*, 31 U.S.P.Q.2d 1130, 1132 (Fed. Cir. 1994) (noting that it is a useful general rule that “a reference that ‘teaches away’ can not [sic] serve to create a *prima facie* case of obviousness”). Moreover, a reference must be considered in its entirety, including portions that would lead away from the claimed invention. See M.P.E.P. § 2142.02. Indeed, “[i]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it that will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” *In re Wesslau*, 147 U.S.P.Q. 391, 393 (C.C.P.A. 1965). With the foregoing precedent in mind, Applicants respectfully assert that the pending claims are not obvious in view of the cited references taken alone or together.

The Cited Reference Combination Does Not Disclose all of the Claimed Features

Respectfully, Applicants submit that the cited reference combination does not disclose a device or controller that facilitates program contrail of the device to effectuate a desired temperature rate of change, profile, or sequence for a workpiece. For example, the independent claims for the pending patent application recite as follows:

Claim 1: “a controller operable to control operation of the power source, wherein the controller is operable to receive programming instructions to selectively increase and decrease workpiece temperature at a desired rate of change and to automatically control operation of the power source to provide

inductive heat to the workpiece to selectively increase and decrease the workpiece temperature at the desired rate of change;”

Claim 11: “a controller operable to control operation of the induction heating power source to increase workpiece temperature to an elevated temperature and to reduce workpiece temperature from the elevated temperature to a lower temperature at a desired rate of temperature decrease automatically in response to programming instructions and the w. orkpiece temperature data;”

Claim 16: “wherein the user interface enables a user to program the control unit to form a desired workpiece temperature profile by assembling a plurality of segments representative of a heating operation together;”

Claim 21: “wherein the user interface enables a user to establish a sequence of inductive heating operations to be performed automatically by the induction heating system from a selection of inductive heating operations;”

Claim 37: “wherein the user interfaces enables a user to establish a sequence of inductive heating operations from a selection of inductive heating operations that may be performed automatically by the induction heating system;”

Claim 39: “a controller operable to control operation of the power source automatically to heat the workpiece according to a desired workpiece temperature profile, wherein the controller is operable to heat the workpiece at a first rate of temperature increase during a first portion of the workpiece temperature profile and to heat the workpiece at a second rate of temperature increase during a second portion of the workpiece temperature profile, the second rate of temperature increase being different than the first rate of temperature increase;” and

Claim 46: “a controller operable to control operation of a power source electrically coupled to a heating device, wherein the controller provides a user with a menu of heating operations that may be programmed into the controller in any combination to establish a desired workpiece temperature profile,”

(Emphasis added.)

As quoted above, the Examiner contends that Toooh discloses a controller operable to control operation of the heating rate of a workpiece, relying on Ruget and Yuki to only obviate the lack of disclosure related to an induction device in Toooh. However, as introduced above, Applicants respectfully submit that Toooh does not disclose an assembly in which the rate of

change of a workpiece is monitored and appropriately effectuated. Instead, Applicants' review of Toooh finds that this reference simply teaches that the controller 400 operates the burners 110 to provide for a desired ultimate temperature of the workpiece, without any regard to the rate of temperature increase or decrease in the workpiece. In the Toooh device, radiation pyrometers ascertain the surface temperature of a billet 50 progressing through the furnace. *See* Toooh, col. 3, ll. 60-65. In response to the temperature information gleaned from the pyrometers, the Toooh device, specifically the processor 400, compares the measured temperature of the billet 50 to a predicted temperature and adjusts the furnace to vitiate the difference. *See id.* at col. 5, ll. 31-57. Thus, the processor of Toooh is not concerned with controlling the rate at which the temperature change occurs, but instead is only concerned with the end result, i.e. reaching the expected value. For example, in the Toooh device, if the measured top surface exceeds beyond a plus or minus 20 degree Fahrenheit range, the processor 400 will respond by adjusting the burners 110 to vitiate this temperature difference as quickly as possible. *See id.* at col. 5, ll. 62-66. Nothing, however, in Toooh teaches, discloses or suggests that this elimination of expected and actual temperature differential takes into account a rate of temperature change or a temperature profile, as is recited in the instant claims. Respectfully, Applicants submit that interpreting the Toooh reference otherwise would be to attribute teachings to this reference that are neither expressly nor inherently disclosed therein.

Yuki Teaches Away from the Claimed Subject Matter

Furthermore, Applicants respectfully assert that Yuki can not support a *prima facie* case of obviousness with respect to certain of the instant claims, because Yuki teaches away from the claimed subject matter. In contrast to independent claims 1 and 11, for example, the alleged benefit of the Yuki device stems from a technique that provides an estimated molten mass temperature on the basis of a detected degree of consumption. *See* Yuki, col. 2, ll. 64-68. Indeed, Yuki expressly states that “[t]he actual temperature of the molten metal mass is regulated on the basis of the estimated temperature.” *See id.* at col. 3, ll. 12-15 (emphasis added). Thus, the Yuki device does not operate through the use of temperature feedback as is recited in claims 1 and 11, for example. Instead, Yuki teaches an antithetical technique by employing only estimations of temperature,

thereby teaching away from the claimed subject matter and rendering Yuki inapplicable in support of a *prima facie* case of obviousness with respect to certain of the pending claims.

The Examiner has Employed Impermissible Hindsight in Combining the Cited References

Additionally, Applicants respectfully assert that the Examiner has employed impermissible hindsight reconstruction to reach the instant claims. In determining the differences between the prior art and the claims, the question under Section 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *See Stratoflex, Inc. v. Aeroquip Corp.*, 218 U.S.P.Q. 871 (Fed. Cir. 1983). Thus, the Examiner must not look at each element of a claim individually, but rather the claims should be viewed as a tapestry comprising the recited elements. Moreover, “it is impermissible, however, to simply engage in a hindsight reconstruction of the claimed invention, using the applicant’s structure as a template and selecting elements from references to fill the gaps.” *In re Gorman*, 18 U.S.P.Q. 2d 1885, 1888 (Fed. Cir. 1991) (emphasis added). Simply put, what may seem logical to combine in retrospect and after viewing an applicant’s invention is not obvious unless the cited references, without benefit of this hindsight, teach what is claimed. *See In re Zurko*, 42 U.S.P.Q.2d 1476, 1479 (stating “[w]hile in retrospect, looking at applicants’ invention, it might seem logical to perform a repeat-back in the UNIX system over a trusted line, neither UNIX nor FILER2 teaches communications with the user of a trusted pathway,” as is recited in the claim in question).

Applicants respectfully submit that the Examiner has not presented a cogent line of reasoning that is supported by objective evidence to combine the cited references to reach the instant claims. The device of Toooh relates solely to gas fired furnaces, and does not disclose or suggest the use of any other type of heating element. *See e.g.*, Toooh, Abstract. To obviate this deficiency, as is quoted above, the Examiner, however, relied on Ruget and Yuki to show that induction heating devices and gas burners are both types of heating elements. However, this simple genus relationship does not objectively establish why one of ordinary skill in the art would employ an induction heating device with the allegedly appropriately programmable system

of Toooh. Indeed, Applicants respectfully submit that incorporating induction heating devices with in the device of Toooh would require substantial redesign. And as the Court of Customs and Patent Appeals has held, a *prima facie* case of obviousness can not be supported if the suggested combination would require “a substantial reconstruction and redesign of the elements shown” in a cited reference. *See In re Rotti*, 123 U.S.P.Q. 349, 352 (C.C.P.A. 1959). Moreover, by relying solely on the fact that induction heating devices have certain advantages over gas burner systems, the presented motivation to combine the cited references only retrospectively identifies the benefits of Applicants’ claimed subject matter in view of Applicants’ disclosure. That is, Applicants respectfully submit that the Examiner has employed the teachings of the application as a road map to combine the cited references, and such impermissible hindsight reconstruction is not sufficient to support a *prima facie* case of obviousness.

Therefore, Applicants respectfully submit that the cited references do not, whether taken alone or together, render obvious claims 1-9, 11-19, 21, 23, 25-27, 37, 39, 40, 42, and 44-50. In view of the foregoing, Applicants respectfully request allowance of these claims.

Second Rejection Under 35 U.S.C. § 103(a)

In the Office Action, dependent claims 10 and 43 were rejected in view of Toooh, Ruget, Yuki, and the Jancosek et al. reference (U.S. Patent No. 4,845,332; hereinafter “Jancosek”). Applicants, however, respectfully assert that the addition of Jancosek does not obviate the deficiencies of the Toooh-Ruget-Yuki reference combination discussed above in relation to the independent claims of the present application. Accordingly, Applicants respectfully assert that dependent claims 10 and 43 are patentable by virtue of their respective dependencies to allowable base claims and also by virtue of the additional features recited therein. Respectfully, reconsideration and allowance of claims 10 and 43 are requested.

Third Rejection Under 35 U.S.C. § 103(a)

In the Office Action, claims 20 and 38 were rejected under 35 U.S.C. § 103(a) as obvious in view of Toooh, Ruget, Yuki, and the Fox et al. reference (U.S. Patent No. 5,266,764; hereinafter "Fox"). In rejecting these claims, the Examiner stated that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Toooh combined with Ruget and Yuki to use a portable control unit so that it can be adapted for various heating systems, in view of the teaching of Fox." *See* Office Action mailed March 25, 2005, p. 7. Applicants, however, respectfully submit that the Examiner's reason for combining all four of the cited references to reach the instant claims is conclusory and unsupported by objective evidence. Indeed, Applicants respectfully submit that the Examiner has not shown why one of ordinary skill in the art would combine these four references to reach the instant claims, but instead has merely selected elements from isolated disclosures and combined them to reach the instant claims. Indeed, each of Ruget, Yuki, and Toooh relates to relatively large assembly line processes, surely antithetical to a portable unit. For example, Toooh relates to an assembly line furnace for the manufacture of metal slabs and billets. *See* Toooh, col. 1, ll. 5-10. Similarly, Yuki relates to a device and technique for casting metallic structures from molten metal. *See* Yuki, col. 1, ll. 10-14. In view of the teachings of these references, Applicants respectfully submit that nothing suggests a benefit, let alone a possibility, of making these assembly lines portable. Furthermore, Applicants respectfully assert that Fox does not obviate the deficiencies of Toooh, Ruget and Yuki as discussed above in relation to the independent claims from which dependent claims 20 and 38 depend. Therefore, Applicants respectfully assert that dependent claim 20 and 38 are patentable and in condition for allowance by virtue of their respective dependencies to allowable base claims and by virtue of the features recited therein. In view of the foregoing, Applicants respectfully request reconsideration and allowance of claims 20 and 38.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Date: June 27, 2005

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